What is claimed is:

1. Fluid flow measuring and proportional fluid flow control device, comprising:

a proportional flow valve having a fluid inlet and a fluid outlet;

an actuator for said proportional flow valve for modulating said proportional flow valve;

a restrictive flow element having a restrictive flow element fluid inlet and a restrictive flow element fluid outlet in fluid communication with said fluid inlet of said proportional flow valve, said restrictive flow element creating a pressure drop between said restrictive flow element fluid inlet and restrictive flow element fluid outlet;

means for measuring said pressure drop;

means for calculating a flow rate based on said pressure drop; and

a controller in communication with said pressure drop measuring means and with said actuator for controlling the flow of fluid through said proportional flow valve in response to said measured pressure drop.

2. The fluid flow measuring and proportional fluid flow control device of claim 1, wherein said restrictive flow element creates a parasitic pressure drop.

3. The fluid flow measuring and proportional fluid flow

control device of claim 1, wherein said restrictive flow element comprises a venturi.

4. The fluid flow measuring and proportional fluid flow control device of claim 1, further comprising means for sensing temperature of said of said fluid, and wherein said controller corrects said calculated flow rate in response to said sensed temperature.

5. The fluid flow measuring and proportional fluid flow control device of claim 3, wherein said means for measuring said pressure drop comprises a first pressure transducer for sensing pressure of said fluid upstream of said venturi and a second pressure transducer for sensing pressure of said fluid in the most restrictive part of said venturi.

6. A method of controlling the dispense of fluid from a dispenser to a point of use, comprising:

providing a proportional fluid flow valve having a fluid inlet and a fluid outlet;

providing a restrictive flow element in fluid communication with said fluid inlet, said restrictive flow element creating a pressure drop;

sensing said pressure drop across said restrictive flow element; and

modulating said proportional fluid flow valve in

response to said sensed pressure drop.

7. The method of claim 6, wherein an actuator is provided to modulate said proportional fluid flow valve.

8. The method of claim 6, further comprising providing a controller responsive to said measured pressure drop for controlling said actuator.

9. The method of claim 6, further comprising fuzzy logic control rules for modulating said proportional fluid flow valve.

10. The fluid flow measuring and proportional fluid flow control device of claim 1 further comprising a positioning sensor on said actuator valve.

11. The fluid flow measuring and proportional fluid flow control device of claim 1, wherein said restrictive flow element recovers at least **10** percent of the measured pressured drop.

12. The fluid flow measuring and proportional fluid flow control device of claim 1, wherein said controller uses fuzzy logic rules.

13. The fluid flow measuring and proportional fluid flow

control device of claim 1, wherein said controller uses stored fluid property data to measure and control fluid flow.

14. A method of calibrating a fluid flow device using a single standard calibration fluid, comprising:

providing a flow meter having first and second pressure sensors;

measuring the fluid flow of a first fluid through said flow meter by calculating a first pressure difference between the pressures sensed by said first and second pressure sensors;

measuring the fluid flow of a second fluid through said flow meter by calculating a second pressure difference between the pressures sensed by said first and second pressure sensors;

determining a calibration coefficient based upon the relationship between the flow rate, the fluid density and the calculated pressure difference for said first and second fluids;

determining a relationship between said calibration coefficient and the kinematic viscosity of each said fluid; and

storing said relationship.

15. The method of claim 14, further comprising comparing said stored relationship to the measured differential pressure of a third fluid and determining the flow rate of said third fluid based upon said comparison.

16. The method of claim 14, further comprising correcting

said relationship for temperature variations.

17. A device, comprising:

a proportional flow valve having a fluid inlet and a fluid outlet;

an actuator for said proportional flow valve for modulating said proportional flow valve;

a restrictive flow element having a restrictive flow element fluid inlet and a restrictive flow element fluid outlet in fluid communication with said fluid inlet of said proportional flow valve, said restrictive flow element creating a pressure drop between said restrictive flow element fluid inlet and restrictive flow element fluid outlet;

an upstream pressure sensor;

a downstream pressure sensor;

a controller in communication with said upstream pressure sensor and said downstream pressure sensor, said controller further comprising:

one or more processors;

one or more computer readable memories;

a set of computer readable instructions stored on said one or more computer readable memories and executable by said one or more processor, said set of computer readable instructions comprising instructions executable to:

receive an upstream pressure signal;

receive a downstream pressure signal; and

calculate a fluid flow rate based on said upstream pressure signal and said downstream pressure signal.

18. The device of Claim 17, wherein the controller is in communication with said actuator and said set of computer readable instructions further comprises instructions executable to calculate an overall change in valve output.

19. The device of Claim 17, wherein the controller is further executable to generate a valve control signal based on the change in valve output.

20. The device of Claim 19, wherein the controller further comprises a valve driver operable to generate a valve drive signal based on the valve control signal and communicate the valve drive signal to the actuator.

21. The device of Claim 18, wherein the instructions executable to calculate an overall change in valve output further comprise instructions executable to:

compare a variable associated with flow rate to a first set of membership functions to generate a first set of fuzzy inputs; and

compare a variable associated with a change in flow

rate to a second set of membership functions to generate a second set of fuzzy inputs;

wherein each fuzzy input from the first set of fuzzy inputs and the second set of fuzzy inputs is associated with an input degree of truth.

22. The device of Claim 21, wherein the instructions executable to calculate an overall change in valve output further comprise instructions executable to:

apply a set of rules to the first set of fuzzy inputs and the second set of fuzzy inputs to generate a set of fuzzy outputs, wherein each fuzzy output is associated with an output degree of truth.

23. The device of Claim 22, wherein the instructions executable to calculate an overall change in valve output further comprise instructions executable to:

associate each fuzzy output with a discrete change in valve output value; and

calculate the overall change in valve output based on the output degree of truth of one or more of the fuzzy outputs and the discrete change in valve output value associated with each of the one or more fuzzy outputs.

24. A device comprising a set of computer readable instructions stored on one or more computer readable memories and executable by said one or more processors,

said set of computer readable instructions comprising instructions executable to:

calculate a fluid flow rate; and

calculate an overall change in valve output based on fuzzy logic.

25. The device of Claim 24, wherein the instructions executable to calculate an overall change in valve output further comprise instructions executable to:

compare a variable associated with flow rate to a first set of membership functions to generate a first set of fuzzy inputs; and

compare a variable associated with a change in flow rate to a second set of membership functions to generate a second set of fuzzy inputs;

wherein each fuzzy input from the first set of fuzzy inputs and the second set of fuzzy inputs is associated with an input degree of truth.

26. The device of Claim 25, wherein the instructions executable to calculate an overall change in valve output further comprise instructions executable to:

apply a set of rules to the first set of fuzzy inputs and the second set of fuzzy inputs to generate a set of fuzzy outputs, wherein each fuzzy output is associated with an output degree of truth.

27. The device of Claim 25, wherein the instructions executable to calculate an overall change in valve output further comprise instructions executable to:

associate each fuzzy output with a discrete change in valve output value; and

calculate the overall change in valve output based on the output degree of truth of one or more of the fuzzy outputs and the discrete change in valve output value associated with each of the one or more fuzzy outputs.

28. A device comprising a set of computer readable instructions stored on one or more computer readable memories and executable by said one or more processors, said set of computer readable instructions comprising instructions executable to:

calculate a fluid flow rate; and

calculate an overall change in valve output based on fuzzy logic by:

comparing an error to a first set of membership functions to generate a first set of fuzzy inputs;

comparing a change in flow rate to a second set of membership functions to generate a second set of fuzzy inputs, wherein each fuzzy input from the first set of fuzzy inputs and the second set of fuzzy inputs is associated with an input degree of truth;

applying a set of rules to the first set of fuzzy inputs and the second set of fuzzy inputs to

generate a set of fuzzy outputs, wherein each fuzzy output is associated with an output degree of truth.

associating each fuzzy output with a discrete change in valve output value; and

calculating the overall change in valve output based on the output degree of truth of one or more of the fuzzy outputs and the discrete change in valve output value associated with each of the one or more fuzzy outputs.

29. The device of claim 28, wherein the set of computer instructions further comprise instructions executable to drop fuzzy outputs associated with particular output degrees of truth.

30. The device of Claim 28, wherein the set of computer instructions further comprise instructions executable to base the output degrees of truth on the input degrees of truth.

31. The device of Claim 28, wherein the output degree of truth for a particular fuzzy output is equal to the lowest input degree of truth for a particular set of fuzzy inputs upon which the particular fuzzy output is based.

32. The device of Claim 28, wherein the set of

computer readable instructions further comprise instructions executable to generate a valve control signal based on the calculated overall change in valve output.